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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/755,516	01/04/2001	Eric W. Schieve	AMAT-5320	5078

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APPLIED MATERIALS, INC.
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EXAMINER	
MOORE, KARLA A	

ART UNIT	PAPER NUMBER
1763	

DATE MAILED: 12/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/755,516	SCHIEVE ET AL.	
	Examiner	Art Unit	
	Karla Moore	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 August 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1,2 and 17-30* is/are allowed.

6)☐ Claim(s) *3-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 3-4, 7-8 and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,186,722 to Shirai and in view of U.S. Patent No. 5,746,562 to Hasegawa et al.

4. Shirai discloses the apparatus for processing multiple semiconductor wafers substantially as claimed in Figure 9 and comprising: a transfer chamber (53), a first and second fixed processing chambers (2) with wafer holding platforms with centers, wherein the first and second processing chambers are disposed on a common side of the transfer chamber; and a robot (54) rotatably mounted within the transfer chamber and having first and second spaced apart and vertically aligned wafer holding arms (7) extendable along respective longitudinal, parallel axes for inserting a pair of wafers (W) simultaneously into the first and second chambers.

5. However, Shirai fail to teach either of the first and second processing chambers as adjustably mounted to the transfer chamber using means such as a bellows assembly.

6. Hasegawa et al. teach the use of bellows assemblies (elastic gas tight holding means) for the purpose of gas tightly sealing the portions between two chambers where previous evacuation of the chambers has caused elastic deformation of each of the chambers and damage to the positional relationships of components inside the chamber causing an adverse affect on sample transfer precision (column 1, rows 61-66 and column 2, rows 23-31, rows 40-46).

7. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided bellows assemblies for one or both of the first and second processing chambers in Shirai in order to elastically gas tightly seal the portions between two chambers where

previous evacuation of the chambers has caused elastic deformation of either of the chambers and damage to the positional relationships of components inside the chamber cause an adverse affect on sample transfer precision as taught by Hasegawa.

8. With respect to claims 7 and 8, the apparatus may further comprise a load lock chamber (32) and additional processing chambers (see dashed line on right side of transfer chamber) corresponding respectively to the first and second chamber, the additional chambers being mounted relative to the load lock chamber in ways respectively like those of the first and second chambers.

9. With respect to claim 11, each set of first and second processing chambers may be considered a pair.

10. Claims 5 and 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shirai and Hasegawa et al. as applied to claims 3-4, 7-8 and 11-12 above, and further in view of U.S. Patent No. 5,611,861 to Higashi.

11. Shirai and Hasegawa et al. disclose an apparatus for processing multiple semiconductor wafers substantially as claimed and as described above.

12. However, Shirai and Hasegawa et al. fail to teach the use of a bellows assembly sealed between a first plate and second plate and a hermetically sealed wafer passageway between the chambers nor are means for securing the relative positions of the plates once adjustments thereto have been effected disclosed.

13. Higashi teaches the use of a coupling system comprising bellows assembly (Figures 4A and 4B, 17a and 17b; column 3, rows 46-50) and means for securing (column 7, rows 4-11; column 9, rows 25-27) the relative positions of the plates for the purpose of connecting and disconnecting the valves, allowing communication between each of the process chambers and the transfer chamber in a hermetical sealed fashion.

14. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a bellows assembly and means for securing the relative positions of the plates in Shirai and Hasegawa et al. in order to connect and disconnect the valves communicating with

each of the process chambers and the transfer chamber in a hermetical sealed fashion as taught by Higashi.

15. Claims 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Higashi as applied to claims 5 and 13-16 above, and further in view of U.S. Patent No. 4,854,611 to Press.

16. Higashi discloses the claimed apparatus substantially as claimed and as described above.

17. However, Higashi fails to disclose a mechanism for adjustably mounting the second chamber, wherein the first and second plates are hinged together along a bearing line such that position adjustments thereto can be made in the "X", "Y" and "Z" directions and for thereafter rigidly fastening in place such position.

18. Press discloses a bellows assembly comprising a first plate (10) and a second plate (11) with a bellows element (12) sealed between the plates providing for relative movement in the "X", "Y" and "Z" directions (Figures 1A-C) for the purpose of accommodating the three categories of strain to which a bellows assembly can be subjected and to which it is required to accommodate—axial travel, misalignment and angular travel (column 2, rows 59-64). Press further discloses means for rigidly fastening in place such position for the purpose of minimizing the possibility of bellows failure in use (column 1, rows 31-33).

19. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided relative movement in the "X", "Y" and "Z" directions in the prior art for the purpose of accommodating the three categories of strain to which a bellows assembly can be subjected and to which it is required to accommodate as taught by Press and to have provided means for rigidly fastening in place such position in Higashi for the purpose of minimizing the possibility of bellows failure in use as taught by Press.

20. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,186,722 to Shirai in view of U.S. Patent No. 5,746,562 to Hasegawa et al. and U.S. Patent No. 6,032419 to Hurwitt.

21. Shirai discloses the apparatus for processing multiple semiconductor wafers substantially as claimed in Figure 9 and comprising: a transfer chamber (53), a first and second fixed processing chambers (2) with wafer holding platforms with centers, wherein the first and second processing chambers are disposed on a common side of the transfer chamber; and a robot (54) rotatably mounted within the transfer chamber and having first and second spaced apart and vertically aligned wafer holding arms (7) extendable along respective longitudinal, parallel axes for inserting a pair of wafers (W) simultaneously into the first and second chambers. The apparatus may further comprise a load lock chamber (32) and additional processing chambers (see dashed line on right side of transfer chamber) corresponding respectively to the first and second chamber, the additional chambers being mounted relative to the load lock chamber in ways respectively like those of the first and second chambers.

22. However, Shirai fail to teach either of the first and second processing chambers as adjustably mounted to the transfer chamber using means such as a bellows assembly.

23. Hasegawa et al. teach the use of bellows assemblies (elastic gas tight holding means) for the purpose of gas tightly sealing the portions between two chambers where previous evacuation of the chambers has caused elastic deformation of each of the chambers and damage to the positional relationships of components inside the chamber causing an adverse affect on sample transfer precision (column 1, rows 61-66 and column 2, rows 23-31, rows 40-46).

24. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided bellows assemblies for one or both of the first and second processing chambers in Shirai in order to elastically gas tightly seal the portions between two chambers where previous evacuation of the chambers has caused elastic deformation of either of the chambers and damage to the positional relationships of components inside the chamber cause an adverse affect on sample transfer precision as taught by Hasegawa.

25. Shirai and Hasegawa et al. disclose the invention substantially as claimed and as described above, including each of the chambers being hermetically (gas tightly) sealed, as well as a remotely controlled robot (via controller 48, see Figure 5).

26. However, Shirai and Hasegawa et al. fail to teach suing a slit valve as the sealing means.

27. Hurwitt teach using a slit valve a slit valve for isolating a process chamber and a transfer chamber (column 4, rows 19-30).

28. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a slit valve in Shirai and Hasegawa et al. in order to isolate a process chamber and a transfer chamber as taught by Hurwitt.

29. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shirai, Hasegawa et al. and Hurwitt as applied to claim 9 above, and further in view of U.S. Patent No. 4,854,611 to Press.

30. Shirai, Hasegawa et al. and Hurwitt disclose the apparatus substantially as claimed and as described above.

31. However, Shirai, Hasegawa et al. and Hurwitt fail to disclose a mechanism for adjustably mounting the second chamber, wherein the first and second plates are hinged together along a bearing line such that position adjustments thereto can be made in the "X", "Y" and "Z" directions and for thereafter rigidly fastening in place such position.

32. Press discloses a bellows assembly comprising a first plate (10) and a second plate (11) with a bellows element (12) sealed between the plates providing for relative movement in the "X", "Y" and "Z" directions (Figures 1A-C) for the purpose of accommodating the three categories of strain to which a bellows assembly can be subjected and to which it is required to accommodate—axial travel, misalignment and angular travel (column 2, rows 59-64). Press further discloses means for rigidly fastening in place such position for the purpose of minimizing the possibility of bellows failure in use (column 1, rows 31-33).

33. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided relative movement in the "X", "Y" and "Z" directions in the prior art for the purpose of accommodating the three categories of strain to which a bellows assembly can be subjected and to which it is required to accommodate as taught by Press and to have provided means for rigidly fastening in place such position in Shirai, Hasegawa et al. and Hurwitt in order to minimize the possibility of bellows failure in use as taught by Press.

Allowable Subject Matter

34. Claims 1-2 and 17-30 are allowed.

35. The following is an examiner's statement of reasons for allowance: Independent claims 1, 17 and 24 recite, "a mechanism...adapted to selectively position"; the combination of an adjusting mechanism and a bellows assembly; or the combination of a bellows assembly and a positioning mechanism, respectively. The disclosure of Hasegawa et al. does not fairly teach or suggest these structures or combinations of structures. Nor was any piece of prior art discovered to remedy these deficiencies.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

36. Applicant's arguments filed 18 August 2003 with respect to claims 3-16 have been fully considered but they are not persuasive. Each of the claims recites "a mechanism for adjustably mounting", "means for adjustably positioning", "means for adjustably positioning", or "a mechanism for positioning". These recitations can be characterized by the bellows structure of Hasegawa et al. Alternatively, and as noted above, independent claims 1, 17 and 24 recite, "a mechanism...adapted to selectively position"; the combination of an adjusting mechanism and a bellows assembly; or the combination of a bellows assembly and a positioning mechanism, respectively. The disclosure of Hasegawa et al. does not fairly teach or suggest these structures or combinations of structures.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karla Moore whose telephone number is 703.305.3142. The examiner can normally be reached on Monday-Friday, 8:30am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on 703.308.1633. The fax phone number for the organization where this application or proceeding is assigned is 703.872.9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703.308.0661.

km
24 November 2003

Primary Examiner
AU 1763
P. Hassanzadeh